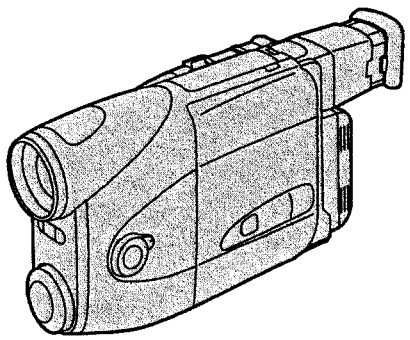
Panasonic VHS C
PAL

HQ

VHS-C Movie

NV-A5A/EN



SPECIFICATIONS

ITEM	SPECIFICATION
POWER	Source: Battery Pack; 4.8 V DC AC Adaptor; 6.0 V DC Consumption; 5.8 W (Battery operation)
VIDEO RECORDING SYSTEM	4 rotary heads, helical scanning system PAL
TAPE FORMAT	VHS-C Cassette Tape (Tape width 12.7 mm)
TAPE SPEED	SP mode: 23.39 mm/s LP mode: 11.7 mm/s Record/Playback Time: SP: 45 min. with NV-EC45XG, NV-EC45SGXP LP: 90 min. with NV-EC45XG, NV-EC45SGXP
CAMERA	PICK-UP ELEMENT: CCD (Charge Coupled Device)
	STANDARD ILLUMINATION: 1,400 lux
	MINIMUM REQUIRED ILLUMINATION: 1 Lux (Low Light Mode)
	LENS: 10:1 Variable Speed Power Zoom Lens with Digital AI Auto Focus, Auto Iris, Auto Focus System, F1.8 (4.6~46 mm), Filter Diameter 37 mm
	IMAGE SENSOR: 1/4 inch CCD Image Sensor
	VIEWFINDER: 0.7 inch Colour LCD Viewfinder

ITEM	SPECIFICATION
VIDEO	HEADS: 4 rotary heads, 1 flying erase head
	OUTPUT: PHONO CONNECTOR; 1.0 Vp-p 75Ω unbalanced
AUDIO	HEAD: 1 Stationary head (Normal-Mono)
	OUTPUT: PHONO CONNECTOR; −6 dB, 47 kΩ loaded
WEIGHT	Approx. 720 g (without Battery Pack)
DIMENSIONS	76 (W) × 118 (H) × 241 (D) mm
STANDARD ACCESSORIES	1 pc. AC Adaptor 1 pc. Battery Pack 1 pc. Cassette Adaptor 1 pc. Shoulder Strap 1 pc. DC Input Cable 1 pc. Battery for Cassette Adaptor Operation 1 pc. AC Cable 1 pc. AV Output Cable 1 pc. AV Wide Scope

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

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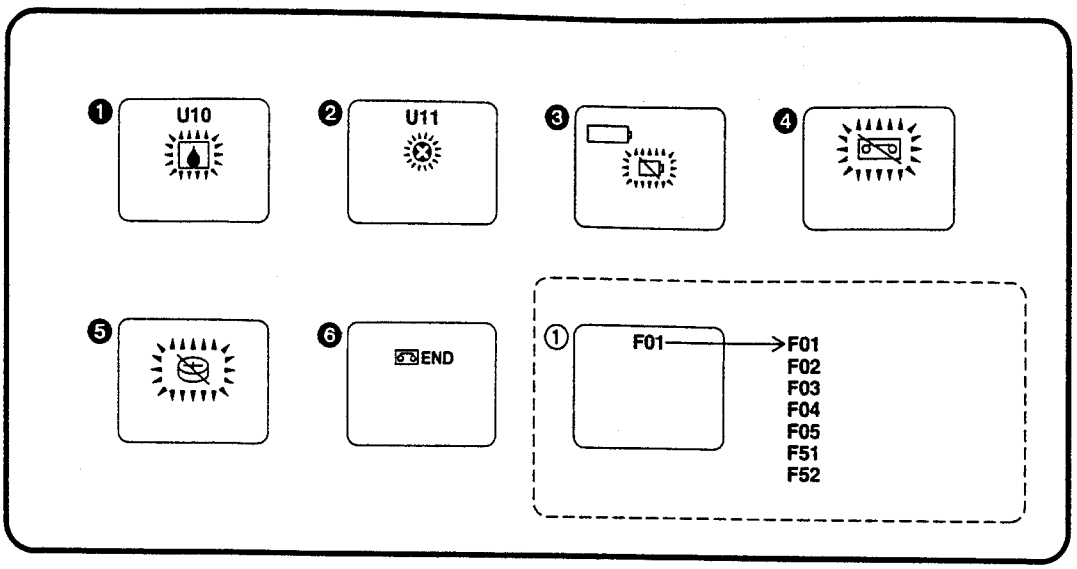
SECTION 1
GENERAL DESCRIPTIONS



Indications in the Viewfinder

■ Warning/Alarm Indications

❶ Condensation

❷ Video Head Clogging

❸ Remaining Battery Power
When the last segment of this indication has disappeared, the "CAMERA" Indication Lamp flashes for a few seconds, and then the Movie Camera automatically switches off. Replace the Battery Pack with a fully charged one.

❹ Tape
When no video cassette is inserted, or when the tab of the inserted video cassette is broken out, this indication flashes. Insert a video cassette with intact tab.

❺ Built-in Lithium Battery
The built-in Lithium Battery is exhausted; charge it.

❻ End of the Tape
When the tape has reached its end, this indication lights. Insert a new Video Cassette.

① Error Code
(Error codes are for service personnel information.)
If the "F" Indication appears in the Viewfinder, some malfunction has occurred. If the indicated error code is between "F01" and "F05", the Movie Camera will turn itself off automatically one minute after the "CAMERA" Lamp has started to flash. (If the indication is "F51" or "F52", the Movie Camera will not turn off automatically.)
In this case, write down the error code and tell it to the service personnel.
F01: Locked Take Up-Reel
F02: Locked Supply-Reel
F03: Locked Unloading Mechanism
F04: Locked Loading Mechanism
F05: Locked Cylinder
F51: Locked Focus Motor
F52: Locked Zoom Motor

NOTE

Precautions for the Movie Camera

In the event of abnormal operation (e.g. if the unit emits smoke or an unusual smell), immediately stop operating the unit and consult qualified service personnel.

■ Precautions When Using the Movie Camera
- Do not disassemble or reconstruct it.
- Do not subject it to strong vibrations or shocks. (Handle it with care to prevent accidentally dropping it.)
- When a thunderstorm approaches, stop using it. (If the AC Adaptor is being used, disconnect it from the mains outlet.)
- Do not aim the Lens at the sun. (This could damage internal parts of the Movie Camera.)
- Do not use it in places with high temperature and high humidity.
- Do not use it in the water or in places where water or some other liquid could splash on it. (If it is accidentally dropped into water while the AC Adaptor is being used, disconnect it from the mains.)
- Do not use it with the cassette compartment facing down. (This could cause uneven winding of the tape.)
- Do not insert or remove the video cassette in dusty places.
- Do not use the Viewfinder as a carrying handle when transporting the Movie Camera.
- Do not insert any foreign objects into the Movie Camera nor spill water into it.
- Do not use it near magnets or magnetized objects.
- Do not use it in areas with strong electric fields. (This could negatively influence the picture quality.)
- Do not operate it near a TV set or a radio. (This could distort the picture and sound reception.)
- Do not use it in places with steam or oily smoke.

■ Precautions When Storing the Movie Camera
- Do not store this Movie Camera in the following places:
  —Places exposed to direct sunlight.
  —Places with high temperature and high humidity (e.g. in a closed car or in a bathroom).
  —Near heaters.
- Do not leave it in direct contact with rubber or plastic products for a long time.
- Keep it out of reach of children.

■ Precautions When Transporting the Movie Camera
- When not actually shooting, carry it in a camera bag or camera case for maximum protection.
- Keep the packing materials. When transporting it in the future, pack it in the same way as you purchased it.

If the Video Heads Become Clogged with Dirt, Shooting Clean Pictures Is No Longer Possible.

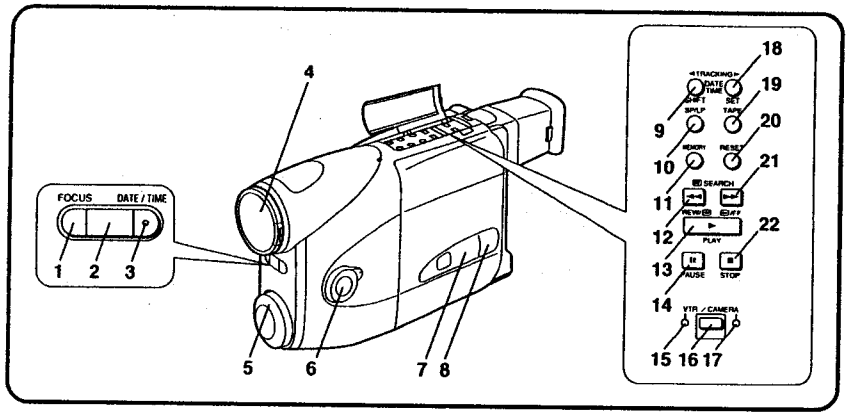
■ Symptoms of Dirty Video Heads
- When the following symptoms occur, the video heads are clogged.
  ❶ The "U11/⊙" indication in the Viewfinder flashes. (When shooting immediately after replacing the video cassette, this indication may disappear temporarily.)
  ❷ The picture is distorted.
- When the video heads are excessively clogged, the Movie Camera's recording and playback capacity is impaired. When the above symptoms occur, consult qualified personnel.

Precautions against Condensation

■ Symptoms of Condensation
If the following symptoms occur, condensation has formed inside the Movie Camera.
❶ The Condensation Indication "U10/[▲]" in the Viewfinder flashes. (A few seconds later, the Movie Camera automatically turns itself off.)
❷ When turning on the Movie Camera, it turns itself off. (However, the Movie Camera also turns off when the Battery Pack is exhausted!)

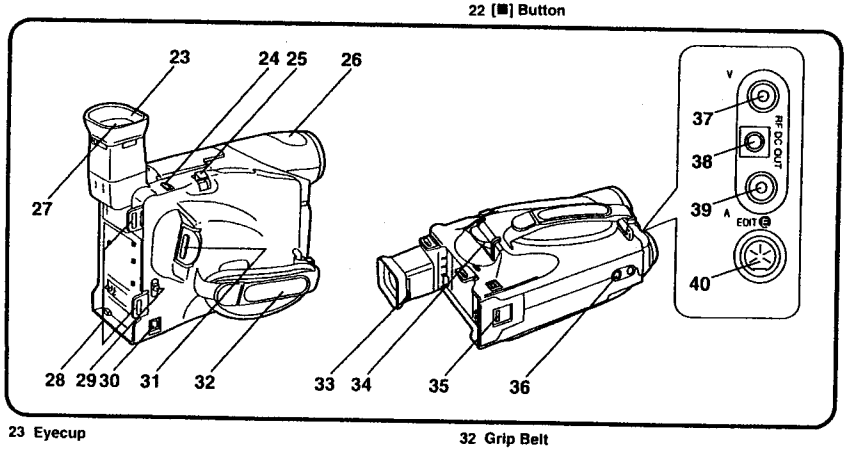
■ Remedy
1. Wait a few hours before operating the Movie Camera again. (The actual time depends on the surrounding conditions.)
2. Turn on the Movie Camera.
3. Confirm that the Condensation Indication is not displayed any more.
4. For added safety, wait about 1 more hour.

■ Notes about Condensation
- Condensation can form when the Movie Camera is suddenly brought from cold surroundings to a place which is hot or humid. To prevent condensation from forming in such a case, keep it in a tightly closed plastic bag or something similar for 1 to 2 hours before shooting or storing the Movie Camera at the new place.
- Since condensation forms gradually, there may already be some condensation inside the Movie Camera even before the Condensation Indication begins to flash.
- In an extremely cold place, condensation may freeze and turn into frost. As the Movie Camera cannot detect frost, the Condensation Indication does not appear until the frost melts and turns into condensation.



Controls and Components

1 [FOCUS] Button
2 White Balance Sensor
3 [DATE/TIME] Button
4 Lens Cap
5 Focus Ring
6 [AE] Selector
7 Cassette Compartment Cover
8 Cassette Compartment [LOCK] Button
9 [DATE/TIME/SHIFT • ◄ TRACKING] Button
10 [SP/LP] Button
11 [MEMORY] Button
12 [◄◄] Button
13 [►] Button
14 [❚❚] Button
15 "VTR" Indication Lamp
16 [VTR/CAMERA] Button
17 "CAMERA" Indication Lamp
18 [DATE/TIME/SET • TRACKING ►] Button
19 [TAPE] Button
20 [RESET] Button
21 [►►] Button
22 [■] Button



23 Eyecup
24 [▲ EJECT] Lever
25 [W • T] Zoom Lever
26 Microphone
27 Viewfinder
28 Shoulder Strap Holders
29 [BATT. EJECT] Lever
30 [DC IN] Socket
31 Start/Stop Button
32 Grip Belt
33 Eyepiece Corrector Control Knob
34 [POWER] Switch
35 Viewfinder Brightness Control [+ ◄ BRIGHT ► −]
36 Tripod Receptacle
37 [VIDEO OUT] Socket
38 [RF DC OUT] Socket
39 [AUDIO OUT] Socket

BATTERY PACK

■ Charging Time and Maximum Time for Continuous Shooting and Manual Operation

Battery Pack No.	Charging Time	Max. Continuous Shooting Time
Supplied	Approx. 60 min.	Approx. 55 min.
VW-VBS10E	Approx. 65 min.	Approx. 60 min.
VW-VBS20E	Approx. 130 min.	Approx. 120 min.
VW-VBH10E	Approx. 80 min.	Approx. 70 min.
VW-VBH20E	Approx. 160 min.	Approx. 140 min.

Notes:
- The use of the zoom and other functions increases the power consumption, so that the actual recording time per Battery Pack may actually be 30%–50% less than the max. continuous shooting time listed above.
- Do not dispose of the exhausted Battery Pack with your household waste. When purchasing a new Battery Pack, return the old Battery Pack to your dealer for environmentally correct disposal.

How to charge a Battery Pack if its operation time has become too short for practical use, or if it has been stored for a long time:
Continue charging for 24 hours even after the Charging Indication Lamp on the AC Adaptor goes out.
(If this does not result in an operation time sufficient for practical use, the service life of this Battery Pack has reached its end. Replace it with a new one.)

■ How to Use the Charge Confirmation Marker

Use this marker to distinguish between charged and discharged Battery Packs.
For example, slide the knob so that the dot ❶ is visible after the charging is completed.

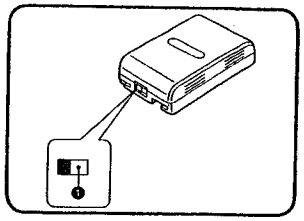
2 How to Charge the Battery Pack

The following explanations show you how to use the supplied AC Adaptor for charging the Battery Pack.

Notes:
1. When charging the Battery Pack, disconnect the DC Input Cable from the AC Adaptor.
2. Charge the Battery Pack at a room temperature between 10°C and 35°C.
   The Battery Pack's ability to generate electric energy is based on a chemical reaction. Because this reaction can take place better at high temperature, the maximum shooting time may be considerably shorter than listed when shooting at low temperature
3. If the operation time of the Battery Pack after charging is too short for practical use, the Battery Pack has reached the end of its service life. Replace it with a new one.
4. Do not charge the Battery Pack again when it is already fully charged.
5. During shooting or during charging, the Battery Pack may become warm. This is normal.

■ Charging Indication Lamp

Lit: During charging
Not lit: Charging has finished. For optimum charging, continue charging for 2 hours after the lamp goes out.



Precautions for the Battery Pack

■ Cautions for Use

- Do not try to disassemble or reconstruct it.
- Do not throw the exhausted Battery Pack into a fire.
- Make sure that no metal objects touch the connectors of the Battery Pack.
  (When carrying it in a bag or similar, take care that keys, coins, etc. do not contact it.)
- For charging, be sure to use only the specially designed AC Adaptor or Car Battery Charger.
- When the operation time even after proper charging is too short for normal use, the service life of the Battery Pack has reached its end. (It can be charged approx. 200 times.)
- During use, it may become warm. However, this is normal and not a malfunction.
- Do not leave it in places with high temperature, e.g. exposed to direct sunlight.
- When the Battery Pack has become exhausted and the Movie Camera has turned off automatically, remove the Battery Pack before connecting the DC Input Cable from the AC Adaptor to the Movie Camera, otherwise the Movie Camera cannot be turned on.
- Do not dispose of the exhausted Battery Pack with your household waste. When purchasing a new Battery Pack, return the old Battery Pack to your dealer for environmentally correct disposal.

Precautions for the AC Adaptor

■ Cautions for Use

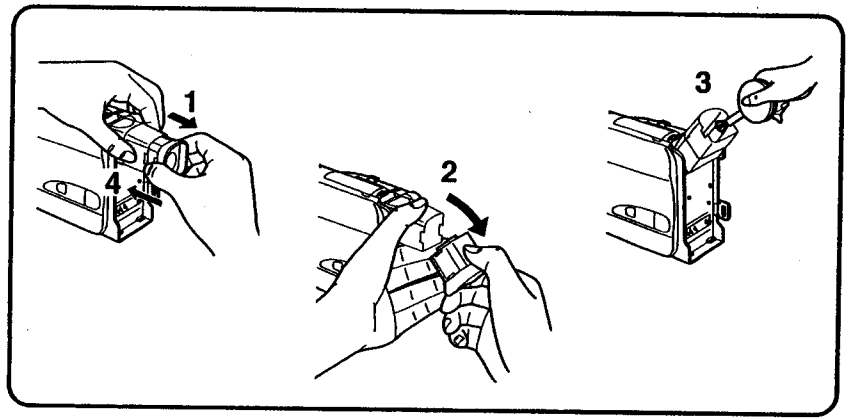
- Before connecting the AC Adaptor to a mains outlet, confirm that the local AC mains voltage and frequency and within the voltage and frequency range specified on the rating plate.
- Do not use it for any purpose other than supplying the Movie Camera with power and charging the Battery Pack.
- Do not operate it very close to a radio, TV etc.
  (Reception may be distorted.)
- When unplugging the Mains Cable, pull it by the plug, not by the cable.
- Do not bend the cables excessively.
- Do not expose the cables to high temperature and chemicals.
- Do not handle the AC Adaptor with wet hands.
- Before cleaning the AC Adaptor, make sure that it is disconnected from the AC mains socket.

1 How to Use the AC Adaptor as Power Supply Unit

Note:
When using the AC Adaptor to supply the Movie Camera with power, do not attach the Battery Pack to the AC Adaptor or the Movie Camera.

2 How to Use the Car Battery Cord (optional)

Notes:
1. The Car Battery Cord can only be used with 12 V DC negative-grounded vehicles.
2. Do not start the car engine while the Movie Camera is powered by the car battery.
3. If the voltage drops suddenly, e.g. when the heater in the car is turned on, the Movie Camera automatically turns off to protect it. Wait about 10 seconds before turning it on again.



Cleaning

1 How to Clean the Viewfinder

1 **Grasp the Viewfinder by the knobs on its left and right side and pull it to its fully extended position.**

2 **Hold the Viewfinder with both hands and pull down and outward as shown in the illustration above.**

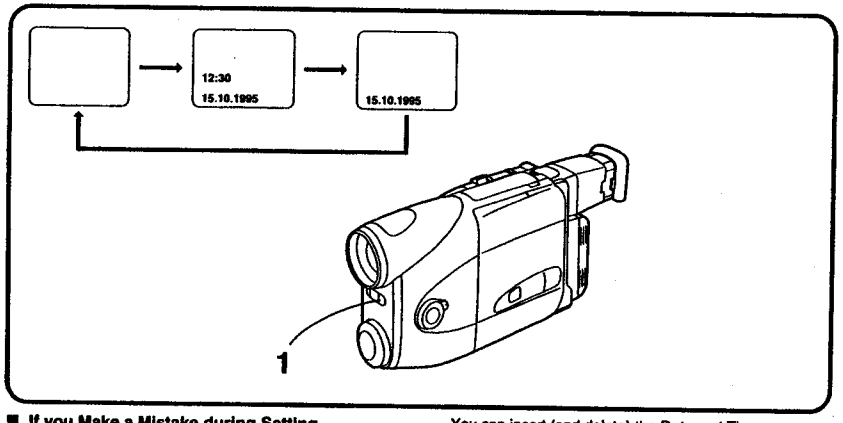
3 **Remove dust with a blower brush.**

4 **Replace the Viewfinder in reverse manner to step 2.**

2 How to Clean the Movie Camera

Notes:

1. Do not use benzine, thinner or other chemicals for cleaning, because they could change the colour and damage the surface of the camera body.
2. When using a chemically treated cloth for cleaning, carefully follow the instructions for its use.
   - Wipe the Movie Camera with a clean, dry cloth. Never use cleaning fluid or other chemicals.
   - Clean the lens only with a blower brush (used for photo cameras) or special lens cleaning tissue (used for glasses and cameras).



■ If you Make a Mistake during Setting, Restart from Step 3.

■ Changing the Figures of the Date/Time Indication

By pressing the [SET] Button repeatedly, the Date/Time Indication can be changed in the following order:

Year:	1990→1991→ . . . . . →2089→1990→...
Month:	1→2→ . . . . . →12→1→...
Day:	1→2→ . . . . . →31→1→...
Hour:	0→1→ . . . . . →23→0→...
Minute:	00→01→ . . . . . →59→00→...

2 Inserting and Deleting the Date and Time

You can insert (and delete) the Date and Time indications during shooting and when in the Shooting Pause Mode.

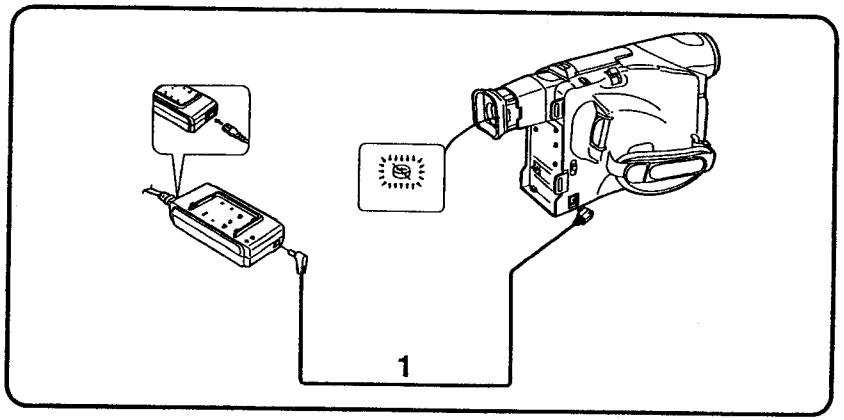
1 **Press the [DATE/TIME] Button.**

- By pressing this button repeatedly, you can change the Date/Time Indication in the Viewfinder in the following order. Select the desired indication.

12:30

→No indication→15.10.1995→15.10.1995

Date and Time Date only



3 The Built-in Lithium Battery

A built-in rechargeable lithium battery maintains the operation of the built-in clock when the Movie Camera is turned off. When the Movie Camera is in operation, this battery is charged automatically.
However, if the Movie Camera is not used for a very long time, the lithium battery can become exhausted. In this case, the "⛁" indication in the Viewfinder flashes and the date returns to the initial Indication "1.1.1990".

■ How to Charge the Built-in Lithium Battery

If the "⛁" indication in the Viewfinder flashes for approx. 10 seconds when you turn the Movie Camera on, the lithium battery is exhausted and must be charged as explained below.

1 **Connect the Movie Camera to the AC Adaptor.**

- After the lithium battery has been charged for approx. 8 hours, it can maintain the operation of the clock for approx. 3 months.
- After charging the lithium battery, the "⛁" indication still flashes to remind you to set the date and time as explained.

White Balance Adjustment

The Movie Camera will automatically perform the white balance to assure natural colours under almost any shooting condition.

Notes:

1. If the Movie Camera is moved from outdoors to indoors during shooting, the picture will initially take on a slightly reddish cast but will gradually regain its natural colours.
2. Be careful not to cover the White Balance Sensor ① with your hand, etc. during shooting.

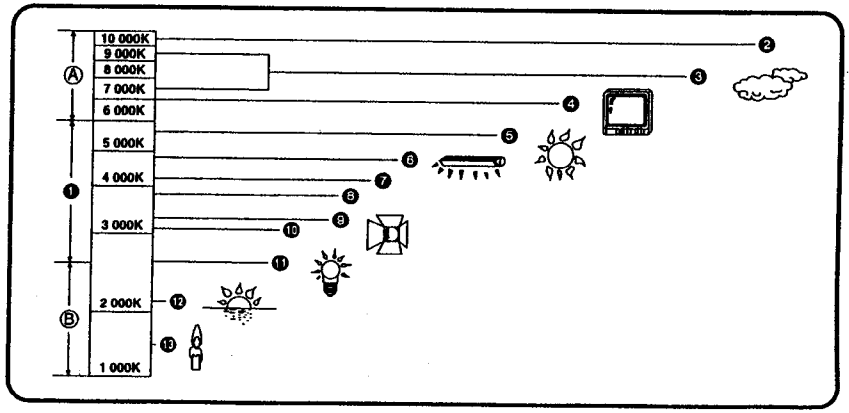
In the following shooting situations, precise white balance adjustment may not be possible.

❶ When shooting under mercury-vapor, natrium or some types of fluorescent lamps, etc.

❷ When intense lighting is used, e.g. spot lights in a theatre or when the colour temperature of the light source is low.

❸ When shooting at sunrise or sunset.

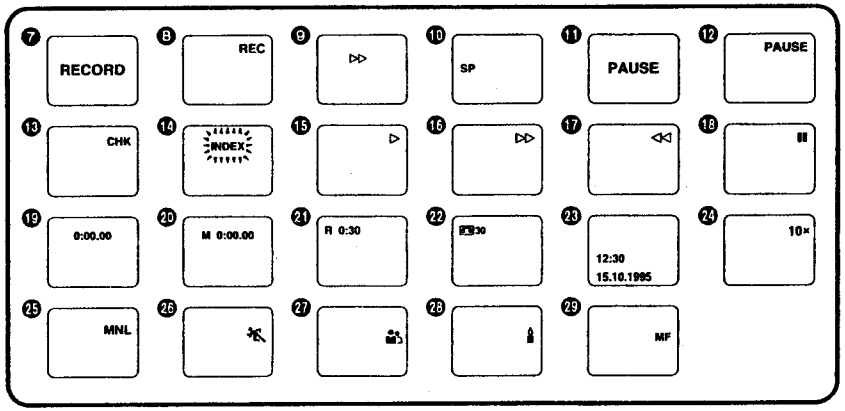
- When shooting with an ND Filter (optional) or a Conversion Lens (optional).



Colour Temperature and White Balance

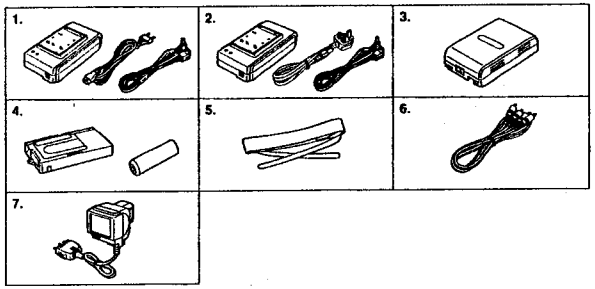
The colour temperature of the light source is measured in Kelvin (K). The higher Ⓐ the Kelvin value is, the more bluish is the light; the lower Ⓑ the value, the more reddish is the light. This is not directly related to the brightness.
The table shows the relationship between natural light, artificial light and colour temperature.

❶ Control range of the Auto White Balance Function
❷ Blue sky
❸ Cloudy sky (rain)
❹ TV screen
❺ Sunlight
❻ White fluorescent lamp
❼ 2 hours after sunrise or before sunset
❽ 1 hour after sunrise or before sunset
❾ Halogen light bulb
❿ 30 minutes after sunrise or before sunset
⓫ Incandescent light bulb
⓬ Sunrise or sunset
⓭ Candlelight



■ **Shooting and Playback Indications**

⓱ **Shooting Mode (large indication)**
⓲ **Shooting Mode (small indication)**
⓳ **Tape Run Mode**
⓴ **Recording Speed Mode**
㉑ **Shooting Pause Mode (large indication)**
㉒ **Shooting Pause Mode (small indication)**
㉓ **Recording Review Mode**
㉔ **Recording of Index Signal**
㉕ **Playback/Camera Search Mode**
㉖ **Fast Forward/Cue Mode**
㉗ **Rewind/Review/Camera Search Mode**
㉘ **Still Playback Mode**
㉙ **Tape Counter**
㉚ **Tape Counter with activated Memory Stop Function**
㉛ **Remaining Tape Time**
㉜ **Tape Length**
㉝ **Date and Time**
㉞ **Zoom Magnification**
㉟ **Manual Shooting Mode**
㊱ **Sports Mode**
㊲ **Portrait Mode**
㊳ **Low Light Mode**
㊴ **Manual Focus Mode**



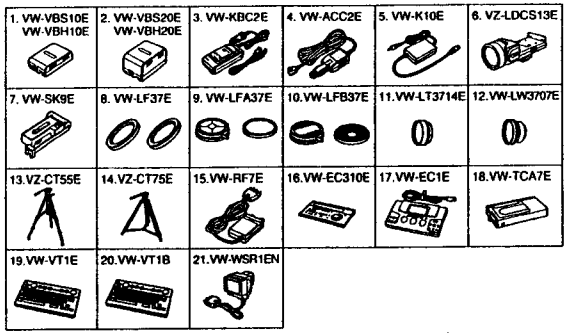
Before Shooting

1 Standard Accessories

1. **(Areas other than Hong Kong)**
   AC Adaptor
   For supplying power to the Movie Camera or for charging the Battery Pack
   DC Input Cable and AC Mains Cable
   For connection to the AC Adaptor
2. **(Hong Kong Only)**
   AC Adaptor
   For supplying power to the Movie Camera or for charging the Battery Pack
   DC Input Cable and AC Mains Cable
   For connection to the AC Adaptor
3. **Battery Pack**
   For supplying power to the Movie Camera
4. **Cassette Adaptor and Battery**
   For playback on a VTR
5. **Shoulder Strap**
6. **Audio/Video Cable**
   For connection to a TV set or VTR
7. **AV WideScope**

Notes:
1. Before connecting, confirm that all systems are turned off and that the connection cables are not damaged.
2. Do not expose the connection cables to high temperature, chemicals and objects with sharp edges; also do not bend the cables excessively.
3. Do not connect the cables with wet hands.
4. When unplugging the Mains Cable, pull it by the plug, not by the cable.

CAUTION:
TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.



Optional Accessories

1. VW-VBS10E (Ni-Cd Battery Pack)
   VW-VBH10E (Ni-MH Battery Pack)
2. VW-VBS20E (Ni-Cd Battery Pack)
   VW-VBH20E (Ni-MH Battery Pack)
3. Car Battery Charger
4. Car Battery Cord
5. 5-Pin Synchro Cord
6. Video DC Light
7. Shoe Adaptor
8. Filter Kit
9. Special Effect Filter Kit (A)
10. Special Effect Filter Kit (B)
11. Tele Conversion Lens
12. Wide Conversion Lens
13. Standard Tripod
14. Deluxe Tripod
15. RF Adaptor
16. Editing Controller
17. Editing Controller
18. Cassette Adaptor
19. Video Titler
20. Video Titler (Hong Kong Only)
21. AV WideScope

Notes:
- Some accessories are not available in some countries.
- To mount the Video DC Light on the Movie Camera, the Shoe Adaptor (optional) is necessary.

10. Special Effect Filter Kit (B)
11. Tele Conversion Lens

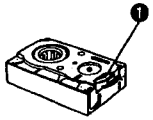
●To mount the Video DC Light on the Movie Camera, the Shoe Adaptor (optional) is necessary.

Special Notice Sentences

Before Shooting

Notes:
1. Before connecting, confirm that all systems are turned off and that the connection cables are not damaged.
2. Do not expose the connection cables to high temperature, chemicals and objects with sharp edges; also do not bend the cables excessively.
3. Do not connect the cables with wet hands.
4. When unplugging the Mains Cable, pull it by the plug, not by the cable.

How to Insert the Video Cassette



Notes:
1. Do not repeatedly insert and take out the Video Cassette. This could cause the tape to get loose and damaged.
2. Before inserting the Video Cassette, make sure that the tape is not loose. If it is loose, tighten it by turning the cog wheel ❶ on the side of the Video Cassette in the direction of the arrow.
3. You cannot take out the Video Cassette during shooting.

How to Extend the Viewfinder

Notes:
1. When extending the Viewfinder, do not grasp it by the Eyecup, as it may become detached.
2. Do not apply any pressure on the Viewfinder except when extending or retracting it.
3. Be sure to retract the Viewfinder after shooting.

How to Shoot from the Beginning of a Video Cassette

Note:
If you leave the Movie Camera in the Shooting Pause Mode for more than 6 minutes, it automatically switches off to protect the tape and to conserve Battery Pack power. This condition is called "Recording Lock" (the tape remains in contact with the video heads).
To resume shooting from this condition, turn in the [POWER] Switch (the Movie Camera switches off) and then turn it out again.
If you leave the Movie Camera in the Recording Lock Mode for more than 48 hours, the Recording Lock Mode is cancelled and the Movie Camera automatically switches itself off. You can hear the motor operating when this happens.

After attaching the Battery Pack and removing the Lens Cap, start shooting as follows:

■ Index Signals (VISS)

The "INDEX" Indication flashes briefly in the Viewfinder while an index signal is being recorded. Index signals let you use the VHS Index Search or Intro Scan Function when playing back the tape on a VTR equipped with these functions.

An index signal is recorded automatically in the following cases:
- ●When you start recording for the first time after attaching the Battery Pack.
- ●When you restart recording after exchanging a Video Cassette or after pressing the [VTR/CAMERA] Button.

Check Recorded Scenes while in the Shooting Pause Mode.
- ●The "CHK" Indication appears in the Viewfinder. The final 2 seconds of the last recorded scene are played back in the Viewfinder before the Movie Camera returns to the Shooting Pause Mode. "CHK" means Check.

How to Play Back on a VTR (Using the Supplied Cassette Adaptor)

Notes:
1. Never insert the empty Cassette Adaptor into a VTR unless it is loaded with a Video Cassette.
2. Do not insert the Cassette Adaptor into a VTR and take it out again without running the tape, because this could loosen the tape.
3. When you load the Video Cassette into the Cassette Adaptor, be careful not to touch the tape. After use, take out the Video Cassette from the Cassette Adaptor.
4. For optimum picture quality, it may be necessary to adjust the tracking control on the VTR.

How to Eliminate Picture Distortions by Adjusting the Tracking

Press both the [◄ TRACKING] and the [TRACKING ►] Button simultaneously.

Note:
If pressing both buttons simultaneously does not improve the picture quality, adjust by pressing the [◄ TRACKING] or [TRACKING ►] Button individually. (It may not be possible to remove the noise bars completely.)

How to Use the Cue, Review and Still Playback Functions during Normal Playback

Notes:
1. The sound is played back only during normal playback.
2. In the Cue, Review and Still Playback Modes, horizontal noise bars appear in the picture, or the picture may become black and white or distorted. However, this is normal and not an indication of a malfunction.
3. The horizontal noise bars have a different pattern in the SP mode and LP mode.
   The illustrations above show the noise bar pattern of the LP mode.

How to Use the Tape Counter Indication

■ For Checking the Elapsed Tape Time

Notes:
1. The Tape Counter Indication does not change during playback of parts of the tape on which no recording has been made.
2. Taking out the Cassette or removing the Battery Pack automatically resets the Tape Counter Indication to "0:00.00".
3. When the tape is rewound further than the tape counter position "0:00.00", the minus sign "–" appears in front of the Tape Counter Indication.

How to Confirm the Remaining Tape Time

Notes:
1. The Remaining Tape Time is not displayed until you start shooting or playing back.
2. While the Movie Camera calculates the Remaining Tape Time, the "R" Indication flashes in the Viewfinder. "R" means Remaining.
3. When the Remaining Tape Time becomes less than 2 minutes, the "R" Indication and the Remaining Tape Time Indication start to flash.
4. When using a video cassette bearing the "P" mark or an S-VHS-C video cassette, the Tape Counter Indication may not be very precise.

Power Zooming

Notes:
1. The zoom range extends from 1× to 10×.
2. The zooming speed changes according to how far you push the [W • T] Zoom Lever (the farther it is pushed toward either the "W" or "T" position, the faster the zooming speed becomes).
3. In the maximum telephoto setting (when you have zoomed in), you can adjust the focus only for subjects that are more than 1.5 m from the lens.

■ Using the Macro Close-up Function

After keeping the [W • T] Zoom Lever pressed toward "W" to zoom to the maximum wide-angle setting, the Movie Camera can automatically focus subjects down to a minimum distance of only 5 mm between lens and subject.

Notes:
1. As the depth of field is very small in the Tele Mode, even slight camera movements can cause the subject to go out of focus. Therefore, it is recommended to use a tripod (optional).
2. When shooting pictures in a photo album or a similar situation with insufficient lighting, use a Video DC Light (optional).

How to Adjust the Focus

Notes:
- ●The focus is automatically adjusted to the subject in the centre of the Viewfinder.
  Aim the Movie Camera so that the subject is in the centre of the Viewfinder as shown in illustration ❶.

❶ Correct ❷ Wrong

- ●For the following subjects and shooting situations, however, the Manual Focus Mode should be used.

① A subject with shiny surfaces or much light reflection.

② A subject behind glass that is covered with dirt, dust or water drops.

③ A subject with a part of it near the Movie Camera and another part far away from it.

④ A flat surface, e.g. a white wall.

⑤ An oblique subject.

- ●A fast-moving subject.
- ●A subject with a dark surface.
- ●When using the Macro Close-up Function, special lenses or filters.

How to Shoot in the Manual Focus Mode

Note:
For precise manual focus adjustment, always fully zoom in on the subject, so that the subject appears as large as possible in the Viewfinder. In this condition, it is easier to judge by the picture in the Viewfinder at what position of the Focus Ring the subject is precisely focused.
If you performed the manual focus adjustment in the wide-angle setting and you subsequently zoomed in on the subject, it might then become apparent that it is not precisely focused.

■ To Cancel the Manual Focus Mode

Press the [FOCUS] Button to make the "MF" Indication disappear.
Or reset the [AE] Selector to "AUTO".

How to Shoot Fast-moving Subjects

This function lets you shoot fast-action scenes, such as tennis or other sports, with minimal blur.

■ Using the Sports Mode

In the Sports Mode, the shutter speed is automatically adjusted (between 1/50 s and 1/500 s) according to the brightness of the subject, so images are sharp and stable even when shooting fast movements.
When you play back scenes recorded in the Sports Mode on a VTR, you can enjoy still and slow motion playback with very sharp, detailed images.

Notes:
1. The subject must be brightly lit by sunlight or other strong light, with little shade.
2. When shooting under fluorescent, mercury-vapor or natrium lamps, the picture will be adversely influenced by flickering.
3. When a scene shot in the Sports Mode is played back in the normal playback mode, the picture movement may not be as smooth as it usually is.
4. If you shoot under weak lighting, the " " Indication flashes to warn you that the Sports Mode may not be effective.

■ Using the Portrait Mode

In the Portrait Mode, the iris is automatically set to the maximum aperture for a very small depth-of-field. This gives you a sharply focused subject in the centre of the picture with a blurred background and foreground.

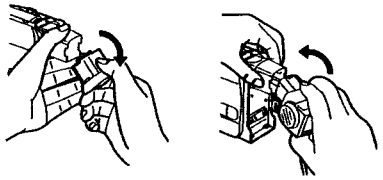
■ Using the Low Light Mode

Note:

Even if you use this mode for outdoor shooting in the daytime, the result will be almost the same as when shooting in the normal mode.

How to Use the AV WideScope (Supplied)

By attaching the AV WideScope (Supplied) to the Movie Camera, the picture and indications in the Viewfinder can be enlarged for easy viewing even from some distance. And during playback, the sound is also played back through the AV WideScope's built-in speaker.

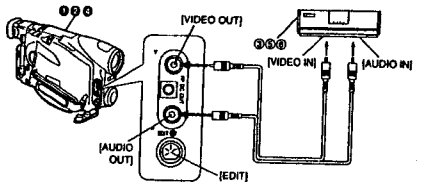


■ How to Handle the AV WideScope

- Operate the Movie Camera in the usual way. The picture and indications appear enlarged on the AV WideScope. Through the AV WideScope's built-in speaker, the sound can be heard.
- The volume of the sound can be adjusted with the volume control.
  However, if the volume is set too high during shooting, howling (high-pitched sound) might occur. Therefore, it is recommended to turn off the sound except for playback.

Notes:

- If the AV WideScope is exposed to direct sunlight, the picture cannot be seen clearly. Shade it from the sunlight with your hand, etc.
  (The AV WideScope is especially suited for indoor shooting.)
- Do not hold the Movie Camera by the AV WideScope when carrying it.
- Do not remove the AV WideScope during playback or shooting. This could cause picture distortion.
- Before storing the Movie Camera in the Carrying Bag, etc., remove the AV WideScope from the Movie Camera.
- When attaching the AV WideScope to the Movie Camera and removing it from the Movie Camera, handle with special care. Forceful handling could damage the connection parts.



How to Copy from the Movie Camera onto a VTR (Dubbing)

Connect with the supplied Audio/Video Cable, as shown above.

■ Operations

Playback Unit (Movie Camera): ❶, ❷, ❹

Recording Unit (VTR): ③, ⑤, ⑥

❶ Insert the recorded video cassette for playback into the Movie Camera.

❷ Playback the tape and stop playback at the point where you want the dubbing to start.

③ Insert the video cassette for recording into the VTR and put it in the Recording Pause Mode. Also read the operating instructions of the VTR.
The picture quality deteriorates slightly in the dubbing process, however, this can be minimized by selecting the standard recording speed (SP Mode) on the VTR and by setting the Edit Switch (if equipped) to "ON".

❹ Start playback.

⑤ Press the Pause/Still Button to start recording.

⑥ Press the Pause/Still Button at the point where you want the dubbing to end.
The VTR is now in the recording pause mode.

⑦ For each further scene that you want to dub, perform steps ❷ to ⑥ above.

■ Edit Socket [EDIT]

By connecting an Editing Controller (optional) to this socket as well as to a VTR equipped with an Edit Socket, you can edit quickly and precisely.

How to View Playback on Your TV Set

Note:

If your TV set is not equipped with an AV Input Socket, the RF Adaptor (optional) is necessary. To connect, read the RF Adaptor's operating instructions.

■ Playback on a TV Set featuring an AV Input Socket

Before Requesting Service

Power Source

Symptom	Cause	Action
•Movie Camera does not turn on.	•Battery Pack is not attached.	•Attach it correctly.
	•Battery Pack is not charged.	•Charge it.
	•AC Adaptor is not connected.	•Connect AC Adaptor correctly to Movie Camera.
•Movie Camera turns off soon.	•Battery Pack is exhausted.	•Use a fully charged one.
	•Shooting was paused for more than 6 minutes.	•Turn in [POWER] Switch to turn off Movie Camera, and then turn it out again.
	•Condensation has formed inside.	•Wait several hours.

Shooting

•No picture appears in the Viewfinder.	•[POWER] Switch is turned in.	•Turn it out.
	•Lens Cap is on the Lens.	•Remove it.
•Indication in the Viewfinder are not clear.	•Viewfinder is not extended.	•Extend it.
	•Eyepiece Corrector is not adjusted.	•Adjust it.
	•Lens in Eyepiece is covered with dust or dirt.	•Clean lens in Eyepiece.
•Shooting cannot be started.	•Tab of inserted Video Cassette is broken out.	•Cover tab hole with adhesive tape.
	•No Video Cassette is inserted.	•Insert a Video Cassette with intact erasure prevention tab.
	•Tape has reached its end.	•Insert a new video cassette.
•Date and time cannot be recorded.	•Date and time have not been set.	•Set date and time.
•Date and time are not displayed in the Viewfinder.	•[DATE/TIME] Button was not pressed.	•Press [DATE/TIME] Button.
	•Built-in Lithium Battery is exhausted.	•Charge built-in Lithium Battery.

Playback

•No playback picture is reproduced.	•[POWER] Switch is turned in.	•Turn it out and press [VTR/CAMERA] Button so that "VTR" Indication Lamp lights up.
	•Movie Camera is not connected to TV set or it is connected incorrectly.	•Connect Movie Camera to TV set correctly.
	•Wrong channel is selected on TV set.	•Select correct channel.
•Picture is not in colour.	•Colour adjustment on TV set is not made properly.	•Adjust colour control on TV set.
•Picture is not in colour or is distorted.	•Tracking is not adjusted correctly.	•Adjust tracking on Movie Camera.
•Picture contains noise bars.	•Cue, Review or Still Playback is being performed.	•This is not a malfunction.